

Advanced Tethersonde for High-Speed Flux Measurements, Phase I

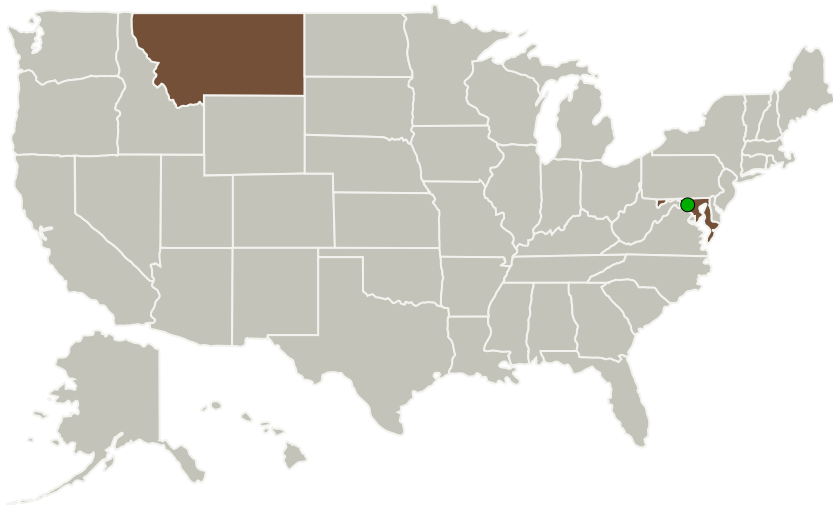
Completed Technology Project (2011 - 2011)



Project Introduction

Flux measurements of trace gases and other quantities, such as latent heat, are of great importance in scientific field research. One typical flux measurement setup involves placing measurement equipment (sonic anemometers and associated sensors or samplers) on rigid towers (rigidity being required to provide a stable platform for the sonic anemometers). These towers are relatively immobile, and cannot be readily moved nor installed in remote locations. This prevents fluxes or vertical profiles of trace species from being measured in many remote areas. Anasphere will develop a tethersonde system which will allow flux measurements to be made using tethered blimps or kites. The tethersonde modules will incorporate a three-dimensional sonic anemometer plus motion-correction sensors so that the motion of the tether and module may be removed from the wind measured by the sonic anemometer. The result will be a highly mobile flux tower. In Phase I, a proof-of-concept tethersonde module will be built and tested which incorporates a three-dimensional sonic anemometer and motion-correction sensors. It will be tested in flight. Phase II work will see the refinement of the modules and sensor algorithms, as well as extensive field tests.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Anasphere, Inc.	Lead Organization	Industry	Belgrade, Montana
● Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations	
Maryland	Montana

Project Transitions

▶ **February 2011:** Project Start

✓ **August 2011:** Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/137974>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Anasphere, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

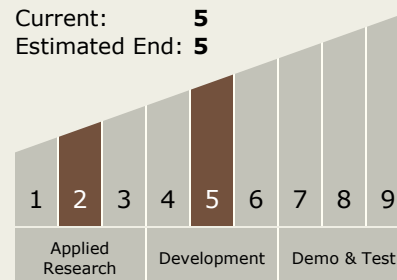
Carlos Torrez

Principal Investigator:

John A Bognar

Technology Maturity (TRL)

Start: 2
Current: 5
Estimated End: 5



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Technology Areas

Primary:

- TX15 Flight Vehicle Systems
 - └ TX15.1 Aerosciences
 - └ TX15.1.4 Aeroacoustics

Target Destinations

The Sun, Earth, The Moon,
Mars, Others Inside the Solar
System, Outside the Solar
System